DOCUMENT RESUME

ED 072 309 VT 018 882

AUTHOR	Loveless, Austin G.
TITLE	Integrated Shop Program Third Year Evaluation. Final Report.
INSTITUTION	Utah Research Coordinating Unit for Vocational and Technical Education, Salt Lake City.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO	603046
PUB DATE	Aug 72
GRANT	OEG-4-7-063046-1612
NOTE	45p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	Building Trades; *Curriculum Development; *Curriculum Evaluation; *Curriculum Research; Drafting; Improvement Programs; *Industrial Arts; Metals; Pilot Projects; Power Mechanics; Pretechnology Programs; Secondary Grades; *Shop Curriculum; Vocational Education; Woodworking
IDENTIFIERS	*Integrated Shop Programs; Occupational Education

ABSTRACT

The Integrated Shop Program was initiated to improve occupational programs in Utah's small high schools so that the students in those schools would be better prepared to enter the job market or continue their education. Operating on a pilot basis for three years, the program has now extended its base from seven high schools to 19 high schools and two junior high schools. Courses taught are: (1) drafting, (2) woodwork and building construction, (3) metal fabrication, and (4) power mechanics. Criteria by which the courses were selected include: (1) the nature of the skills taught in the courses, (2) economic feasibility (the basic equipment necessary for teaching the courses was already in the schools), and (3) student interest. (SN)

ED 072309

FINAL REPORT

Project No. 603046
Grant No. OEG-4-7-063046-1612

INTEGRATED SHOP PROGRAM

THIRD YEAR EVALUATION

August 1972

U. S. Department of
Health, Education, and Welfare

Office of Education
Bureau of Research

VT018882

ED 072309

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

FINAL REPORT

Project No. 603046
Grant No. OEG-4-7-063046-1612

INTEGRATED SHOP PROGRAM

THIRD YEAR EVALUATION

Principal Investigator: Austin G. Loveless

Research Coordinating Unit
For Vocational and Technical Education
Utah State Board of Education
1570 University Club Building
Salt Lake City, Utah 84111

The research reported herein was performed pursuant to a contract with the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

TABLE OF CONTENTS

	Page
Table of Contents	ii
List of Tables	iii
Introduction	1
The General Nature of the Program	1
Objectives of the Program	2
Evaluation of the Third Year Integrated Shop Program	4
Pre-Test and Post-Test	5
Findings	6
Cooperative Industrial Arts Tests	10
Stanford Achievement Test	13
Performance Tests	14
Findings	14
Administrators Opinions	19
Teacher Opinions	24
Student Opinions	33
Conclusions	39
Recommendations	39

LIST OF TABLES

Table

Page

1. Average Percentage Gained Between Pre-test Scores by Program and School 8

2. Comparison of the Percentage Gain of Second and Third Year ISP Schools and First Year ISP Schools with Control Schools on the Pre-test and Post-test 10

3. Comparison of Scores Received by ISP Schools and Two Control Schools on the Standardized Test 11

4. Comparison of Scores Received by ISP Schools and Two Control Schools on the Stanford Achievement Test - High School Technical Comprehension 13

5. Skills Tested in the Drafting and Design Area 15

6. Skills Tested in the Metal Fabrication Area 16

7. Skills Tested in the Power Mechanics Area 17

8. Skills Tested in the Woodwork and Building Construction Area 18

9. School Administrators Understanding of the Integrated Shop Program 19

10. Strong Points of the Integrated Shop Program as Seen by School Administrators 19

11. Weak Points of the Integrated Shop Program as Seen by School Administrators 20

12. Response of School Administrators to the Question, "Has There Been a Higher Percent of Eligible Students Enroll in the Integrated Shop Program than Previously Enrolled in the Industrial Arts and/or Agricultural Mechanics?" 20

13. Response of School Administrators to the Question, "Do You Have More Academically Oriented Students Enrolled in the Integrated Shop Program than Enrolled in Previous Industrial Arts and/or Agricultural Mechanics Programs that the Integrated Shop Program Replaced?" 21

List of Tables (Cont.)

Table — Page

14. Response of School Administrators to the Question, "Do Parents of Students in Your School Support the Integrated Shop Program?" 21

15. Response of Administrators to the Question, "Has the Readability Level of the Instructional Packets for Students in the Integrated Shop Program Been Questioned By:" 22

16. School Administrators Response to the Question, "Has Implementation of the Integrated Shop Program Created Any Administration Problem?" 22

17. Response of Administrators to the Question, "Has the Retraining of Teachers to Teach the Integrated Shop Program Been Adequate in:" 22

18. School Administrators Response to the Question, "Does the Integrated Shop Program Meet the Needs of the Community?" 23

19. Response of School Administrators to the Question, "Do the Students Prefer the Integrated Shop Program to the Traditional Industrial Arts and/or Agricultural Mechanics Program?" 23

20. School Administrators Response to the Question, "Do You Think the Integrated Shop Program has Had Adequate Support From the Staff at the State Level with Respect to Providing:" 24

21. Response of Teachers to the Question, "Is the Integrated Shop Program Guide You Are Using Adequate with Respect To:" 25

22. Response of Teachers to the Question Regarding the Evaluation of the Various Guides 26

23. Response of the Teachers to the Question, "Do You Think the Material in the Guide is Relevant to the Basic Skills and Knowledge Required for Entry Level Jobs in These Fields?" 27

24. Response of Teachers to the Question, "Are You Able to Obtain the Necessary Supplies to Carry Out the Instructional Program Recommended in the Guide?" 27

25. Teachers Response to the Question, "Do You Have Necessary Hand Tools and Power Tools, Machine Tools, and Equipment to Conduct the Integrated Shop Program?" 28

List of Tables (Cont.)

Table

Page

26. Teachers Response to the Question, "Do You Prefer Teaching the Integrated Shop Program Over the Traditional Industrial Arts and/or Agricultural Mechanics Program that You Were Teaching Prior to the Integrated Shop Program?" 28

27. Response of Teachers to the Question, "Are You Receiving the Kind of Support You Think You Should in the Financial Area from Your:" 30

28. Response of Teachers to the Question, "Are You Receiving the Kind of Moral Support You Think You Should from Your:" 30

29. Teachers Response to the Question, "In Your Opinion Do the Students Prefer the Integrated Shop Program to the Traditional Program that You Previously Taught?" 31

30. Response to the Question, "In Your Opinion Do the Students Prefer the Integrated Shop Program to the Traditional Program that You Previously Taught?" by Teachers Who Answered "Yes." 31

31. Response to the Question, "In Your Opinion Do the Students Prefer the Integrated Shop Program to the Traditional Program that You Previously Taught?" by Teachers Who Answered "No." 32

32. Response of Teachers to the Question, "Do You Think the Integrated Shop Program Has Had Adequate Support from the Staff at the State Level with Respect to Providing:" 34

33. Response of Teachers to the Question, "In Teaching the Various Integrated Shop Programs I Am:" 34

34. Student Opinions Concerning Selected Aspects of the Integrated Shop Program 35

35. Students Response to the Question, "What Are the Reasons You Like the Integrated Shop Program Better than Past Programs?" 36

36. Value of the Integrated Shop Program as Seen by the Students 37

37. Reasons Students Gave for Enrolling in the Integrated Shop Program 38

Introduction

The Integrated Shop Program has been operating on a pilot basis for the past three years. The first year the program was in seven high schools. The second year three additional high schools were added to the program. The third year an additional nine high schools and two junior high schools were added to the program.

The General Nature of the Program

The following excerpts from a paper prepared by Dr. William E. Mortimer explains the origin and philosophy of the Integrated Shop Program.

"There are many kinds of vocationally oriented courses which could be offered in a program of this nature. However, it is impossible to offer a great variety of them in a small high school. Even though the interests of students may be many and varied and it would be desirable from their standpoint to have a great variety of offerings, it is not economically feasible to offer all of the types of work that students might desire. Recognizing this fact, the committee working in the preliminary phase of this project selected the general areas of drafting, woodwork and building construction, metal fabrication, and power mechanics as the programs to be offered. The reasons for this selection are as follows:

1. All of these kinds of work are important in modern society. In fact, the total number of jobs related to these four areas of work represent a large and important segment of the labor force, and there are usually ample opportunities for employment.

2. Many of the school shops in small high schools already have a considerable amount of the basic equipment needed to teach these courses. Most of them also have the building space needed.

3. Students generally have interests in one or more of these areas. Of course, some students may have interests and aptitudes in important industrial and agricultural areas not herein represented, but in terms of the limitations which small schools operate it seems that these particular areas would serve the needs of more students than most others which might be selected.

The first two years of the program, ninth and tenth grades, are largely exploratory in nature although skill training is included. At the conclusion of this part of the program a student who is interested in obtaining additional training selects one or possibly two specialized areas in which he will obtain greater depth of training during the eleventh and twelfth grades. . ."

. . . . . .

Objectives of the Program

"The major, over-all purpose of the project is to provide improved programs of occupational preparation in the small high schools of Utah so that students from such high schools may be better prepared than they presently are or have been to enter industry or to continue their education and training at a post-secondary institution. More specific objectives may be stated as follows:

1. To provide a type of vocational training for students in the first two years of high school which will help them to acquire basic skills and knowledge in important industrial and agricultural activities, yet at the same time will allow them to explore the fields of drafting, woodwork and building construction, power mechanics, and metal fabrication with a possible view towards selecting one of these as his occupational field.

2. To provide students who elect to specialize in one or two of the four major areas of work offered in the Integrated Shop Program with high quality skill training and concomitant knowledge so that they may be prepared for entry jobs in industry in their chosen field or for more advanced training at a post-secondary institution.

3. To assist students in acquiring those personal and social traits which help them to be worthy citizens and valuable employees.

4. To assist students in finding employment upon completion of their training program and to help keep them employable and employed."

. . . . . .

"Seven criteria were set up for the schools, school districts, and communities to meet when the original seven schools were selected. The criteria are as follows:

1. The school district superintendent and the high school principal must have a keen interest in trying a new program such as this and in supporting it to the extent that it can be successful.

2. The teachers must be competent to teach the subject areas included in the program or must be willing to prepare themselves so that they will be competent. In addition, they must have an interest in the examplary program and must do everything possible to make it successful.

3. The schedule of classes within a school must be such that students desiring the program will be able to register for it. Also, there must be enough students enrolled in the program to make it a fairly economic unit in the school system.

4. The physical facilities must be of such a nature that the space and equipment are adequate, or can be readily modified so that they are adequate to accommodate the recommended program.

5. The school district must be in such a financial condition that it can furnish its share of the costs of the program. This would include its portion of:
   a. The teacher's salary
   b. The remodeling of the shop or shops
   c. The tools and equipment
   d. The supplies

6. If it is at all feasible, the community in which the expansion schools are located should have some industry related to one or more of the major areas offered in the training program.

7. The parents of the students who desire to enroll in the program should be willing to have their children engage in such a program and should be interested in supporting it so that it can be successful."

EVALUATION OF THE THIRD YEAR INTEGRATED SHOP PROGRAM

The evaluation procedure for the Integrated Shop Program pilot program in the nineteen rural high schools, two junior high schools, and two control schools consisted of the following:

1. A pre-test and post-test for each of the one semester courses (Drafting, Power Mechanics, Metal Fabrication, Woodwork and Building Construction) plus equivalent courses in the two control schools.

2. A standardized test (Cooperative Industrial Arts Tests) covering the areas of drawing, metals, and woods was administered to the students who were, or had been, registered in Drafting I, Woodwork and Building Construction I, Metal Fabrication II, and Power Mechanics II in the ninth and tenth grades at the Integrated Shop Program schools and in the equivalent courses at the two control schools.

3. A standardized test (Stanford Achievement Test - High School Technical Comprehension) was administered to the students registered in the advanced courses in Metal Fabrication III and IV and Power Mechanics III and IV in the eleventh and twelfth grades at the Integrated Shop Program schools and in the equivalent courses in the two control schools.

4. A performance test was developed for several skill areas within each of the four areas: Drafting I, Woodwork and Building Construction I, Metal Fabrication II, and Power Mechanics II.

5. An opinionnaire was given to a sample of the students in each of the four areas.

6. An opinionnaire was given to the instructors and to the administrators of the Integrated Shop Program schools.

Pre-Test and Post-Test

During the workshop in the summer of 1970 the participants for pilot high schools (vocational agriculture teachers and industrial arts teachers) under the direction of Dr. William E. Mortimer revised the guides that had been developed during the workshop held in the summer of 1969 and used during the school year 1969-70. In addition the participants developed the guides for Metal Fabrication III and IV and for Power Mechanics III and IV. During the workshops mentioned above, unit tests were developed and revised for each of the four guides and unit tests were developed for each of the two advanced courses. From these unit tests a comprehensive pre-test and post-test was developed for each of the six guides.

During the workshop in the summer of 1971 the six guides were again revised where necessary and the guides for Drafting III and IV and Woodwork and Building Construction III and IV were developed. The unit tests and a comprehensive pre-test and post-test were developed for the two above guides.

In addition to the above mentioned workshop, an additional workshop was also held for four weeks for the instructors from the nine additional high schools and two junior high schools. The purpose of this workshop was to acquaint the instructors with the basic philosophy of the Integrated Shop Program and skills they needed to teach the program.

The pre-tests and post-tests were administered to the students at the beginning of the semester, and again at the end of the semester for each of the basic courses.

Two control schools that were as near like the pilot schools in size and geographic location as was possible were selected by the advisory committee. Inasmuch as the instructional material developed was for the students normally registered for Vocational Agricultural Mechanics and Industrial Arts classes, the pre-test and post-test was administered to the students registered in Industrial Arts and Vocational Agricultural Mechanics courses at the control schools.

Findings

Table 1 depicts the average percentage gained between mean scores of the classes on the pre-test and post-tests. The area of Drafting showed the greatest amount of gain, with an average gain of 28 percent for all Integrated Shop Program schools. The least amount of gain was in the area of Woodwork and Building Construction with an average gain of 15 percent. It can also be noted in Table 1 that the control schools made the highest percent gain in the areas of Woodwork and Building Construction and Drafting and Design with an average gain of 18 points and 14 respectively. The least amount of gain by the control schools was in the area of Metal Fabrication.

Table 1 also notes a rather wide span between average percentage gained in each of the four areas by the different schools. For example, in the area of Drafting, school "B" showed an average gain of 47 percent between the pre-test and post-test while school "J" showed a gain of only 13 percent. Each of the other areas show similar variations among the twenty-one schools.

Table 1 indicates that the control schools are nearly equal in the area of Woodwork and Building Construction I to the Integrated Shop Program schools. The control schools showed the greatest difference in percentage gained in the area of Metal Fabrication II but the difference was not significant at

the .05 level. It should be noted that the two control schools did not teach formal courses in areas of Drafting and Power Mechanics at the ninth and tenth grade level.

In comparing total points gained by the Integrated Shop Program schools, and the points gained by both control schools in all four areas, there is not a significant difference between them at the .05 level.

Table 1. Average Percentage Gained Between Pre-test and Post-test Scores by Program and School.

SCHOOL	DRAFTING	WOODWORK AND BUILDING CONSTRUCTION I	METAL FABRICATION II	POWER MECHANICS II	AVERAGE FOUR PROGRAMS
A	23	11	13	9	
B	47	43	23	20	
C	*	*	9	13	
D	26	*	*	15	
E	25	14	*	22	
F	41	28	32	25	
G	30	20	20	17	
H	32	13	13	12	
I	15	7	14.5	*	
J	13	3.5	*	7	
K	*	25	*	*	
L	32	*	*	*	
M	14	*	*	7	
N	16	*	*	16	
O	*	*	25	*	

Table 1. (Continued)

SCHOOL	DRAFTING	WOODWORK AND BUILDING CONSTRUCTION I	METAL FABRICATION II	POWER MECHANICS III	AVERAGE FOUR PROGRAMS
P	35	32	16	19	
Q	*	*	12	10	
R	18	*	*	*	
S	44	31	36	28	
T	45	12	*	*	
U	*	*	*	12	
Average ISP	28	20	19	15	20.5
Average Control	14	18	11**	12	14

* No data available

** Not significant at the .05 level

In comparing the percentage gained between the schools that have been teaching the Integrated Shop Program two and three years with the schools teaching the program for the first year, it can be seen in Table 2 that the second and third year schools did slightly better than the first year schools. The greatest amount of spread was only 6 percent in the Power Mechanics area. This was not significant at the .05 level.

Table 2. Comparison of the Percentage Gain of Second and Third Year ISP Schools and First Year ISP Schools with Control Schools on the Pre-test and Post-test.

	Drafting	Woodwork & Building Construction	Power Mechanics	Metals
2nd & 3rd Year ISP Schools	30	22	19	20
1st Year ISP Schools	27	17	13	19
Control Schools	14	18	12	11

Cooperative Industrial Arts Tests

The test results from the Cooperative Industrial Arts Test are shown in Table 3. It can be noted from the table that the average raw scores of the Integrated Shop Program schools and the control schools are nearly equal in the area of Woods. The Integrated Shop Program schools are higher in the two other areas of Drawing and Metals than the control schools, but the difference is not significant at the .05 level.

Table 3. Comparison of Scores Received by ISP Schools and Two Control Schools on the Standardized Test.

SCHOOL	DRAWING		WOODS		METALS	
	Raw Score	%ile Score	Raw Score	%ile Score	Raw Score	%ile Score
A	24	43	25	48	22	31
B	25	48	29	71	29	71
C	*	*	*	*	26.5	57
D	21	25	28	64	25	48
E	22	31	25	48	28	64
F	25	48	31	81	24	43
G	27	59	27	59	28	64
H	23	37	24	43	28	64
I	23	37	23	37	*	*
J	14	3	22	31	*	*
K	*	*	*	*	30	76
L	27	59	*	*	*	*
M	23	37	26	53	26	53
N	23	37	27	59	*	*
O	*	*	*	*	25	48

Table 3. (Continued)

SCHOOL	DRAWING		WOODS		METALS	
	Raw Score	%ile Score	Raw Score	%ile Score	Raw Score	%ile Score
P	23	37	26	53	28	64
Q	33	87	*	*	26	53
R	22	31	*	*	*	*
S	21	25	27	59	29	71
T	27	59	27	59	*	*
Average ISP	24	45	24	43	26	53
Average Control	20	20	25	43	23	37

Stanford Achievement Test

The results of the Stanford Achievement Test - High School Technical Comprehension that was administered only to the eleventh and twelfth grade students registered in the Integrated Shop Program and to the equivalent classes at the control schools are shown in Table 4. It can be noted that the students from the control schools scored one point higher on the raw score than the Integrated Shop Program students. The percentile scores are based on a national average for this test and show both of the above groups to be above the national average.

Table 4. Comparison of Scores Received by ISP Schools and Two Control Schools on the Stanford Achievement Test - High School Technical Comprehension.

SCHOOL	RAW SCORE	STANDARD SCORE	%ILE SCORE
A	41	59	30
B	50	65	72
C	45	61	56
D	46	62	60
E	46	62	60
F	56	70	90
G	44	60	50
H	47	63	64
I	43	60	50
J	44	60	50
Average ISP	46	62	60
Average Control	47	63	64

*Letter coding in this table does not correspond to letter coding in Table 1.

Performance Tests

Performance tests were developed in the four basic areas of the Integrated Shop Program. Several skills were identified in each area based on the objectives in the respective guides.

An attempt was made to have a minimum of two students from each class take a particular performance test. The students were randomly selected to perform on particular tests. A check was made with the instructor to ascertain if the class as a whole had covered each of the areas. If the skill had not been taught those test items were not administered. Also in those schools with a small enrollment it was not possible to administer as wide a variety of test items as it was in some of the larger schools.

Each test item was rated on a 1 to 10 point scale and like test item scores were averaged to give an average score for each of the test items. Example: If three students took the same performance test and obtained scores of 4, 6, and 8 respectively on the test, their scores were averaged and that particular test would be recorded on the table as 6. Not all of the schools had taught all four areas of the Integrated Shop Program; therefore, no scores will be shown in some areas for some schools.

Findings

Tables 5, 6, 7, and 8 show the results of the performance tests in the various skill areas in Drafting, Metal Fabrication, Power Mechanics, and Woodwork and Building Construction.

Table 5. Skills Tested in the Drafting and Design Area.

SKILL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	Control Schools
D1 Measure to a Given Scale	2	5		2	0	3	5	1	1	1		7			4		3		1	8	4	
D2 Geometric Construction	3	1		0	0	0	2	0	1	1		0			0		2		1	1	1	
D3 Orthographic Projection	1	2		3	1	4	0	3	5	0		3			5		4		0	4	1	
D4 Dimensioning	2	0				4	1	4	0	0					0		0				3	
D5 Sections Views		0		0			0	0	0	4		0					1				1	
D6 Auxiliary Views		0					0	0														

Table 6. Skills Tested in the Metal Fabrication Area.

SKILL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	Control Schools
M1 Precision Measurement		0	3		0		1	3								5						4
M2 Sharpen Drill		0														6						2
M3 Assemble and Cut With a Hacksaw	5	5	6	4	7	10	7	7	5	7						7	5					8
M4 Arc Weld	5	3	0					0	7								4					6
M5 Gas Weld		5																				
M6 Cut with Flame									3								2					3
M7 Thread	8	0	8		8		8	8	9	7												10
M8 Tapping	10	3	8		10		10	10	10	10												10

Table 7. Skills Tested in the Power Mechanics Area.

SKILL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	Control Schools
P1 Gap Spark Plug	10	10	10	5	6		10	8		10		10			10	9	10		10	10		9
P2 Identify Parts of an Engine	9	9	10	10	10		10	10		9		10			10	9	10		9	10		10
P3 Identify Tools	8	9	8	8	8		8	10		8		8			8	8	9		8	9		9
P4 Accept or Reject a Part	4	5		3	5			5		3		0				5	5		5	5		5

Table 8. Skills Tested in the Woodwork and Building Construction Area.

SKILL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	Control Schools
W1 Assemble a Plane	2	7		5	0	7	3	7	2	7	9				7		4			5	9	5
W2 Cut a Board to Length	7	7		9	7	9	7	7	8	7	7				7		8			8	8	8
W3 Join Two Pieces of Wood with Screws	9	2		3	4		3	3	5	6					5		6			4		5
W4 Wire a 3-way Switch																						
W5 Identify Fasteners	9	9			9	9	8	9	3	8					7		8			9		5
W6 Table Saw	4	7			5	8	9	8	9	3	7				4		8			5	5	9
W7 Cost	0			0		0				0	4				0							

Administrators Opinions

Fourteen of the administrators completed and returned the questionnaire. As shown in Table 9, twenty-nine percent indicated that they were thoroughly familiar with the Integrated Shop Program; the remaining seventy-one percent stated that they were somewhat familiar.

Table 9. School Administrators Understanding of the Integrated Shop Program.

Understanding	Number	Percent
Thoroughly familiar	4	29
Somewhat familiar	10	71
Vaguely familiar	0	0
Unfamiliar	0	0

When asked what they considered the strong points of the Integrated Shop Program, the "individualized instruction" and "broader spectrum of areas" were checked by 64 percent and 71 percent respectively. See Table 10.

Table 10. Strong Points of the Integrated Shop Program as Seen by School Administrators.

Strong Points	Number	Percent
Individual instruction	9	64
Organization	4	29
Lock step	1	7
Low cost	1	7
Broader spectrum of areas	10	71
Other	0	0

In responding to what they considered weak points, the administrators checked "lack of take home type projects" and "too much reading material for students." See Table 11.

Table 11. Weak Points of the Integrated Shop Program as Seen by School Administrators.

Weak Points	Number	Percent
Demand too high on the instructor	0	0
Too much reading material for the students	4	29
High cost	0	0
Lack of take home type projects	9	64
Insufficient amount of instructional material	1	7
Other	2	14

The administrators were divided on their response as to whether or not a higher percent of eligible students were registered in the Integrated Shop Program than previously enrolled in the Industrial Arts and/or Agricultural Mechanics courses. As shown in Table 12, forty-three percent indicated "yes" while 57 percent indicated "no."

Table 12. Response of School Administrators to the Question "Has There Been a Higher Percent of Eligible Students Enroll in the Integrated Shop Program than Previously Enrolled in the Industrial Arts and/or Agricultural Mechanics?"

Response	Number	Percent
Yes	6	43
No	8	57

Table 13 shows the administrators response to the question concerning whether the Integrated Shop Program was attracting the more academically

oriented student. Twenty-nine percent indicated they thought it was attracting the more academically oriented student.

Table 13. Response of School Administrators to the Question, "Do You Have More Academically Oriented Students Enrolled in the Integrated Shop Program than Enrolled in Previous Industrial Arts and/or Agricultural Mechanics Programs that the Integrated Shop Program Replaced?"

Response	Number	Percent
Yes	4	29
No	9	64
About the same	1	7

As seen in Table 14, the administrators think that the parents of the students in the Integrated Shop Program are in full support of the program.

Table 14. Response of School Administrators to the Question, "Do Parents of Students in Your School Support the Integrated Shop Program?"

Response	Number	Percent
Yes	14	100
No	0	0

When questioned about the readability level of the instructional packet, 22 percent of the administrators indicated that students had questioned the readability level of the guides, as shown in Table 15. A lesser percent indicated that teachers and parents had questioned the readability level.

Table 15. Response of Administrators to the Question, "Has the Readability Level of the Instructional Packets for Students in the Integrated Shop Program Been Questioned by:"

Response	Yes	%	No	%	Unknown	%
The students themselves	3	22	9	64	2	14
The teacher	2	14	10	72	2	14
The parents	0	0	12	86	2	14

The majority of the administrators indicated that the implementation of the Integrated Shop Program had not created any administration problem as shown in Table 16.

Table 16. School Administrators Response to the Question, "Has Implementation of the Integrated Shop Program Created Any Administration Problem?"

Response	Number	Percent
Yes	4	29
No	10	71

As shown in Table 17, the majority of the administrators thought that the retraining of teachers has been adequate in both developing the philosophy of the Integrated Shop Program and the skill training necessary.

Table 17. Response of Administrators to the Question, "Has the Retraining of Teachers to Teach the Integrated Shop Program Been Adequate in:"

Training Areas	Response			
	Yes	%	No	%
Skill areas	11	79	3	21
Developing the philosophy of ISP	10	71	4	29

Eighty-six percent of the administrators as shown in Table 18 think that the Integrated Shop Program is meeting the needs of their respective communities.

Table 18. School Administrators Response to the Question, "Does the Integrated Shop Program Meet the Needs of the Community?"

Response	Number	Percent
Yes	12	86
No	2	14

Only 64 percent are of the opinion that the students like the Integrated Shop Program better than the traditional program that they had prior to introducing the Integrated Shop Program, as shown in Table 19.

Table 19. Response of School Administrators to the Question, "Do the Students Prefer the Integrated Shop Program to the Traditional Industrial Arts and/or Agricultural Mechanics Program?"

Response	Number	Percent
Yes	9	64
No	5	36

It can be noted in Table 20 that the administrators think they have been getting good support from the State School Office staff in the four major areas listed.

Table 20. School Administrators Response to the Question, "Do You Think the Integrated Shop Program has had Adequate Support from the Staff at the State Level with Respect to Providing:"

Support Areas	Yes	%	Undecided	%	No	%
Financial support	14	100	0	0	0	0
Pre-service training of teachers (Training prior to teaching ISP)	12	86	2	14	0	0
In-service training of teachers	10	71	4	29	0	0
Instructional material	11	79	3	21	0	0

Teacher Opinions

When asked to respond to the question of how adequate they thought the guides and instructional packets were with respect to different areas as shown in Table 21, the teachers were only in complete agreement in two areas and only as the areas relate to the Drafting and Design guide. The area that all of the guides fell down in was providing alternate materials for students to work on when they fail to pass a unit test.

In an overall evaluation of individual facets of the guides by the instructors, it can be noted in Table 22 that the majority thought the guides were good to excellent in most areas. The area considered poorest by the instructors was the "take home projects" in the Metal Fabrication and Woodwork and Building Construction guides.

As shown in Table 23, a high percent of the instructors think the material in the guides is relevant to today's job market in all four areas. There is some question about the Power Mechanics guide as can be noted -- 29 percent were undecided on this question.

Most of the instructors are able to obtain the necessary supplies to carry out the program as shown in Table 24.

Table 21. Response of Teachers to the Question, "Is the Integrated Shop Program Guide You Are Using Adequate With Respect To:"

Areas	Draft/Design Percent			Metal Fab Percent			Power Mech Percent			Wood/Const Percent		
	Yes	UD	No	Yes	UD	No	Yes	UD	No	Yes	UD	No
Providing students with enough direction that they can accomplish the packet objectives with a minimum of supervision from the instructor?	100	0	0	85	15	0	72	14	14	67	33	0
Providing the students with enough specific references and visual aids that they can achieve the objectives with a minimum amount of direction from the instructor?	100	0	0	62	23	15	58	14	28	67	33	0
Providing those students who do not pass the tests on each packet at the 70% level with enough supplementary material and additional references to assure that the student will succeed on the next attempt?	50	31	19	38	38	24	79	14	7	40	40	20
The reading level so that students in the class can read and comprehend the material with a minimum of direction from the instructor?	69	31	0	69	31	1	72	28	0	53	33	14
Enable each student to progress at his own pace?	88	22	0	92	9	0	86	7	7	80	14	6

Table 22. Response of Teachers to the Question Regarding the Evaluation of the Various Guides.

Aspects	Draft/Design			Metal Fab			Power Mech			Wood/Const		
	Percent			Percent			Percent			Percent		
	Excellent	Good	Poor	Excellent	Good	Poor	Excellent	Good	Poor	Excellent	Good	Poor
The instructional packets are	75	25	0	38	62	0	43	57	0	53	47	0
The suggested visual aids are	19	75	6	8	84	8	21	71	8	7	93	0
The exercises are	56	44	0	23	69	8	8	92	0	7	93	0
The take home projects are	Not Applicable			8	46	46	Not Applicable			7	40	47
The packet tests are	31	63	6	16	84	0	16	84	0	27	72	0
The final test is	31	63	6	23	69	8	21	79	0	34	66	0
The manipulative tests are	37	63	0	8	84	8	21	71	8	27	78	0
The written assignments are	6	88	6	8	84	8	16	84	0	0	93	7

Table 23. Response of the Teachers to the Question, "Do You Think the Material in the Guide is Relevant to the Basic Skills and Knowledge Required for Entry Level Jobs in These Fields?"

Area	Percent		
	Yes	Undecided	No
Drafting & Design	81	12	7
Metal Fabrication	77	15	8
Power Mechanics	71	29	0
Woodwork & Building Construction	93	7	0

Table 24. Response of Teachers to the Question, "Are You Able to Obtain the Necessary Supplies to Carry Out the Instructional Program Recommended in the Guide?"

Area	Percent	
	Yes	No
Drafting & Design	94	6
Metal Fabrication	85	15
Power Mechanics	93	7
Woodwork & Building Construction	87	13

As shown in Table 25, the majority of teachers in the area of Woodwork and Building Construction state they have the necessary hand and power tools and machines to teach the program. There are a number of teachers who think they need more hand tools, power tools, and machines in the other three areas.

Table 25. Teachers Response to the Question, "Do You Have Necessary Hand Tools and Power Tools, Machine Tools, and Equipment to Conduct the Integrated Shop Program?"

	Draft/Design Percent		Metal Fab Percent		Power Mech Percent		Wood/Const Percent	
	Yes	No	Yes	No	Yes	No	Yes	No
Hand tools	NA		69	31	64	36	80	20
Power tools	NA		54	46	64	36	80	20
Machine tools	NA		62	38	57	43	73	27
Equipment	NA		62	38	64	36	67	33
Instruments - tables, stools, etc.	69	31	NA		NA		NA	

NA - Not applicable

It can be noted in Table 26 that the majority of teachers prefer teaching the Integrated Shop Program over their previous program.

Table 26. Teachers Response to the Question, "Do You Prefer Teaching the Integrated Shop Program Over the Traditional Industrial Arts and/or Agricultural Mechanics Program that You Were Teaching Prior to the Integrated Shop Program?"

Area	Percent	
	Yes	No
Drafting & Design	94	6
Metal Fabrication	85	15
Power Mechanics	100	0
Woodwork & Building Construction	87	13

When asked to indicate if they thought they were getting the support they should from various people in the school and district, the teachers, as shown in Tables 27 and 28, indicated that the principal and superintendent were giving them financial and moral support, but over 50 percent indicated they were not getting support from vocational directors and counselors.

As shown in Table 29, the instructors are divided on whether or not the students prefer the Integrated Shop Program over the traditional program. According to the instructor, students in Metal Fabrication and Woodwork and Building Construction prefer the traditional program.

The instructors who answered "yes" to the above question were asked to indicate the reasons the students preferred the Integrated Shop Program over the traditional Industrial Arts and/or Agricultural Mechanics. As shown in Table 30, the two reasons that rate highest were "better organized" and "student able to proceed at his own rate."

Those instructors who answered "no" to the question as to whether or not the students preferred the Integrated Shop Program over the traditional Industrial Arts and/or Agricultural Mechanics were asked to check the possible reasons why the students did not prefer the Integrated Shop Program. Table 31 shows the reasons the instructors checked. It can be noted that "too much reading" and "not enough individual project construction" were the two items checked most.

Table 27. Response of Teachers to the Question, "Are You Receiving the Kind of Support You Think You Should in the Financial Area from Your:"

	Draft/Design		Metal Fab		Power Mech		Wood/Const	
	Percent		Percent		Percent		Percent	
	Yes	No	Yes	No	Yes	No	Yes	No
Principal	88	12	85	15	93	7	73	27
Superintendent	88	12	85	15	79	21	73	27
Vocational Director	56	44	46	54	50	50	60	40

Table 28. Response of Teachers to the Question, "Are You Receiving the Kind of Moral Support You Think You Should from Your:"

	Draft/Design		Metal Fab		Power Mech		Wood/Const	
	Percent		Percent		Percent		Percent	
	Yes	No	Yes	No	Yes	No	Yes	No
Principal	81	19	92	8	93	7	80	20
Superintendent	69	31	77	23	86	14	60	40
Vocational Director	37	63	46	54	50	50	40	60
Counselor(s)	44	56	46	54	50	50	60	40
Other Teachers	69	31	69	31	79	21	60	40

Table 29. Teachers Response to the Question, "In Your Opinion Do the Students Prefer the Integrated Shop Program to the Traditional Program that You Previously Taught?"

Response	Draft/Design No.	%	Metal Fab No.	%	Power Mech No.	%	Wood/Const No.	%
Yes	10	63	4	31	8	57	5	33
No	6	37	9	69	6	43	10	67

Table 30. Response to the Question, "In Your Opinion Do the Students Prefer the Integrated Shop Program to the Traditional Program that You Previously Taught?" by Teachers Who Answered "Yes."

Reason for Liking ISP	Draft/Design No.	%	Metal Fab No.	%	Power Mech No.	%	Wood/Const No.	%
Better organized	10	100	6	66	7	87	5	100
Student can proceed at his own rate	10	100	4	44	6	75	4	80
Less expense to student	5	50	0	0	1	13	2	40
Broader spectrum of areas	3	30	4	44	8	100	5	100
More equipment available	9	90	5	55	6	75	4	80
More materials available	7	70	3	33	2	25	5	100
Individualization of instruction	7	70	2	22	6	75	3	60

Table 31. Response to the Question, "In Your Opinion Do the Students Prefer the Integrated Shop Program to the Traditional Program that You Previously Taught?" by Teachers Who Answered "No."

Reason for Not Liking ISP	Draft/Design		Metal Fab		Power Mech		Wood/Const	
	No.	%	No.	%	No.	%	No.	%
Not enough teacher assistance	0	0	0	0	0	0	0	0
Not enough teacher demonstrations	0	0	0	0	2	66	0	0
Too much reading	5	83	6	66	6	100	7	70
Lack of pictoral illustrations	2	33	0	0	1	17	0	0
Not enough individual project construction	NA	NA	8	88	6	100	8	80
Other	3	50	2	22	1	17	2	20

NA - Not applicable

With respect to the support the Integrated Shop Program has had from the staff at the state level, the instructors, as shown in Table 32, indicated they thought the program had been well supported in four of the areas. The one area that was thought to have received the least amount of support was with respect to "in-service training of teachers."

The teachers were questioned about the extent that they are using the Integrated Shop Guides. As shown in Table 33, all the instructors are using the guides. They are supplementing the guides with other material, especially in the Woodwork and Building Construction program.

Student Opinions

Students registered in the Integrated Shop Program were asked to respond to an opinionnaire concerning various aspects of the program. Table 34 shows the responses of the students to 26 items concerning content, methodology, and equipment. It can be noted that from 50 to 80 percent of the students indicated they were satisfied or very satisfied with the Integrated Shop Program as it relates to most of these 26 items.

Table 32. Response of Teachers to the Question, "Do You Think the Integrated Shop Program Has Had Adequate Support from the Staff at the State Level with Respect to Providing:"

	Draft/Design Percnet			Metal Fab Percent			Power Mech Percent			Wood/Const Percent		
	Yes	UD	No	Yes	UD	No	Yes	UD	No	Yes	UD	No
Financial support	94	6	0	85	8	8	86	7	7	87	7	7
Pre-service skill training of teachers (Training prior to teaching the ISP)	94	0	2	69	8	23	79	14	7	80	7	13
Pre-service training dealing with the basic philosophy of the Integrated Shop Program	88	13	6	62	31	8	79	21	0	67	7	27
In-service training of teachers	44	44	12	62	8	31	57	29	14	60	7	33
Instructional materials	75	12	19	77	8	15	71	0	29	73	7	20

Table 33. Response of Teachers to the Question, "In Teaching the Various Integrated Shop Programs I Am:"

Response	Draft/Design		Metal Fab		Power Mech		Wood/Const	
	No.	%	No.	%	No.	%	No.	%
Using only the Integrated Shop Program Guide	10	63	5	38	6	43	5	33
Using the Integrated Shop Program Guide plus some supplementary material	5	31	8	62	8	57	10	67
Using the Guide some, but mainly other material	0	0	0	0	0	0	0	0

Table 34. Student Opinions Concerning Selected Aspects of the Integrated Shop Program.

Working on the Integrated Shop Program Guides, this is how I feel about:	I'm very dissatisfied	I'm dissatisfied	I can't decide	I'm satisfied	I'm very satisfied	Not applicable
1. The lectures that are given in the shop.	3	7	9	67	12	2
2. The lectures that are given in the classroom.	3	12	20	56	12	1
3. Being able to keep busy all the time.	2	7	12	34	33	0
4. The chance to work at my own speed.	3	7	7	48	34	0
5. The chance to do different things from time to time.	7	11	13	38	22	0
6. The way the teacher gives individual instructions.	4	10	14	46	20	1
7. The instructional packet I am working on today.	7	10	24	39	10	7
8. The chance to work with other students.	3	6	10	51	28	1
9. The chance to do something that makes use of my abilities.	6	7	10	50	29	0
10. The praise I get for doing a good job.	6	9	19	46	18	2
11. The satisfaction of completing a section.	2	6	19	50	19	2
12. How tools are available when I need them.	7	16	12	41	22	1
13. How easy the program is and that I can finish early.	5	7	32	47	6	3
14. The idea that when I finish I can work on a project I choose.	7	14	14	39	25	3
15. The number of reports I am required to write.	4	4	22	36	19	9
16. The amount of time spent in class learning to measure.	5	9	18	49	13	5
17. The amount of time spent in learning about power machines.	7	10	12	50	18	4
18. The number of films that are shown.	14	18	7	38	12	5
19. The way the metric system was covered.	11	13	20	34	7	12
20. The knowledge I gain from the written reports that I write.	7	9	17	33	10	10
21. The amount of class time spent on safety.	3	7	7	60	19	2

Table 34.(Continued)

Working on the Integrated Shop Program Guides, this is how I feel about:	I'm very dissatisfied	I'm dissatisfied	I can't decide	I'm satisfied	I'm very satisfied	Not applicable
22. The amount of class time learning about hand tools.	3	6	11	68	10	3
23. How easy the instructional packets are to read.	6	8	18	50	10	6
24. The tests that are given at the end of each chapter.	5	10	18	54	9	3
25. The cleaning of the shop after class.	6	7	10	59	16	5
26. The homework assignments.	3	3	9	43	25	14

In response to the question as to why they like the Integrated Shop Program better than past programs, thirty-six percent indicated, as shown in Table 35, that it was because of the more meaningful work experiences provided. "Better organized" was checked by 31 percent and 30 percent checked "more and better tools." Nineteen percent indicated that they did not like the Integrated Shop Program better than the past programs.

Table 35. Students Response to the Question, "What Are the Reasons You Like the Integrated Shop Program Better than Past Programs?"

Reason	Response	
	Number	Percent
More tools and equipment	80	30
Better organized	81	31
Less expensive	33	12
More meaningful work experience	96	36
Don't like ISP better	52	19
Other	22	8

When asked what value they thought the Integrated Shop Program was or would be to them, 27 percent of the students indicated they thought the program would be of value in going on to a trade or technical school. Twenty-six percent indicated it would, with additional training, qualify them for a job. Another 20 percent indicated they thought it would qualify them for a job upon graduation from high school. Only 13 percent did not know what value the program would be to them. See Table 36.

Table 36. Value of the Integrated Shop Program as Seen by the Students.

Value	Response	
	Number	Percent
Qualify me for a job when I graduate from high school	54	20
With additional training qualify me for a job when I graduate	69	26
Be of little value in helping me find a job when I graduate	27	10
Be of value to me as I go on to a 4 year college or university	42	16
Be of value to me as I go on to a trade school or technical college	73	27
Don't know what value it will be to me	35	15
Other	15	5

Table 37 reveals the reasons why the students were enrolled in the Integrated Shop Program. Forty-one percent gave as their main reason as wanting to learn about actual shop work for career reasons. Their second most important reason was "wanted to operate power machinery" and "wanted to make a special project." These were checked by 26 percent and 21 percent respectively.

Table 37. Reasons Students Gave for Enrolling in the Integrated Shop Program.

Reasons	1st Reason		2nd Reason	
	Number	Percent	Number	Percent
Required of all boys	27	11	15	7
Hobby	14	6	37	15
Wanted to make a special project	30	13	50	21
Wanted to operate power machinery	34	14	59	26
Easy way to make a good grade	5	2	13	7
Wanted to learn about actual shop work for career reasons	98	41	36	16
Other	30	13	19	8

Conclusions

Based on the findings of this study, the following conclusions can be reached:

1. The Integrated Shop Program is being accepted by all interested groups, namely the students, teachers, administrators, and parents.

2. The teachers and administrators are satisfied with the support they have received from the staff of the Vocational Division at the State School Office.

3. Students in these rural schools in general are getting a broader exposure to occupational skills and career opportunities than they were getting in the previous programs.

4. There is no significant difference on the pre-test, post-test scores and the Standard test scores between the Integrated Shop Program students and the control school students.

5. The students can perform on the cognitive objectives better than they can on the psychomotor objectives of the Integrated Shop Program.